Acc. Nr.: AP0040420 Ref. Code: UR0108

JPRS 50248

USSR A UDC 621.145.2:621.396.626

ARESHEV, M. S.

"Average Values of the Number and Total Duration of Interference Produced by Extraneous Artificial Earth Satellites in a Ground Communication Line"

Moscow, Radiotekhnika, Vol 25, No 1, Jan 70, pp 9-12

Abstract: This article presents an investigation of interferences produced by extraneous communication satellites moving along random orbits in a ground communication line during a given time interval. From the calculated averaged values of operating time and number of operating periods within a given interval, the average values of resulting duration and number of interferences were determined. The case of a communication satellite system producing short period interferences with a sufficiently high sequence frequency is considered. Original article has 17 formulas.

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19741890

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UDC 621.145.2:621.396.626

ARESHEV, M. S.

"Average Values of the Number and Total Duration of Interference Produced by Extraneous Artificial Earth Satellites in a Ground Communication Line"

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1/1

USSR UDC 547.743.1.07:542.958.3

ARESHIDZE, KH. I., and CHIVADZE, G. O., Institute of Physical and Organic Chemistry imeni P. G. Melikishvili, Georgian SSR Academy of Sciences, Tbilisi

"Synthesis of Pyrrolidine and Other Heterocyclic Compounds from Butandiole-1,4 and Ethandiole-1,2"

Riga, Khimiya Geterotsiklicheskikh Soyedineniy, No 7, 1975, pp 937-941

Abstract: Studies were conducted on the effectiveness of seven different catalysts used in amination of butanediole-1,4 and ethanediole-1,2, which were derivatives of alumosilicate. Highest yields of pyrrolidine were obtained from both compounds when 95% bleaching clay and 5% ferric oxide was used as the catalyst. With this catalyst amination of butandiole-1,4 at 350-360° was characterized by an energy of activation of 15.2 kcal/mole; utilization of natural alumosilicate under the same conditions gave an energy of activation of 16.4 kcal/mole.
1/1

1/2 011 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--CATALYTIC PROPERTIES OF NATURAL AND ACTIVATED ALUMINUM SILICATES IN THE DEHYDRATION OF 1,4,BUTANEDIOL -U-

AUTHOR-(03)-ARESHIDZE, KH.I., TAVARTKILADZE, YE.K., CHIVADZE, G.O.

COUNTRY OF INFO--USSR

SOURCE--ZH. PRIKL. KHIM. (LENINGRAD) 1970, 43(3), 601-5

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ALUMINUM SILICATE, DEHYDRATION, BUTANE, ALCOHOL, FURAN, CATALYST ACTIVITY, BUTADIENE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1997/0799 STEP NO--UR/0080/70/043/003/0601/0605

CIRC ACCESSION NO--AP0119706

UNCLASSIFIED

2/2 011 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0119706

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. GUMBRIN AND ASKANGLIN CLAYS CATALYZE THE DEHYDRATION OF 1,4,BUTANEDIOL (I) TO TETRAHYDROFURAN (II) AT 200-400DEGREES; CATALYST ACTIVITY IS INCREASED BY WASHING WITH HCL. II IS OBTAINED IN 98PERCENT YIELD OVER HCL WASHED GUMBRIN AT 280DEGREES AT VOL. RATE 0.3 HR. PRIME NEGATIVE1. GASEOUS PRODUCTS ARE FORMED LARGER THAN 300DEGREES; AT 350DEGREES 20 WT. PERCENT I IS CONVERTED TO GAS CONTG. 20.8 WT. PERCENT BUTADIENE. FACILITY: INST. FIZ. ORG. KHIM. IM. MELIKISHVILI, TBILISI, USSR.

UNCLASSIFIED

1/2 009 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--CYCLOHEXANONE -U-

AUTHOR-(03)-ARESHIDZE, KH.I., SIKARULIDZE, N.G., DZHAOSHUILI, O.A.

COUNTRY OF INFO--USSR

SOURCE--USSR 215,199
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,
DATE PUBLISHED--09MAR70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CYCLOHEXANONE, CHEMICAL PATENT, HYDROGENATION, PHENOL, PALLADIUM, CATALYTIC ORGANIC SYNTHESIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3002/1452 STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0128851
UNCLASSIFIED

2/2 009 UNCLASSIFIED PROCESSING DATE--30OCT70
CIRC ACCESSION NO--AA0128851
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CYCLOHEXANONE IS PREPD. BY HYDROGENATING PHENOL IN VAPOR PHASE IN THE PRESENCE OF AN PD FORM X TYPE ZEOLITE CATALYST WITH PD CONTENT 0.8PERCENT.

UNCLASSIFIED

USSR UDC 632.951:633.11

ARESHNIKOV, B. A., KOGOSOVA, E. YA., GOROKHOVSKIY, N. A., and VOYCHUK, G. A., Ukrainian Scientific Research Institute of Plant Protection

"Effectiveness of Metathione Against the Stink bug [Eurygaster]"

Moscow, Khimiya v Sel'skom Khozyavstve, Vol 10, No 9, (119), 1973, pp 33-35

Abstract: Metathione exhibited a faster effect against bugs than chlorophos. With an elevation of air temperature the toxicity of this preparation increased, but the duration of its activity became shorter. Optimal doses of this agent have been determined to be: against the overwintered bugs -- 0.8 kg/hectare, against younger larvae -- 0.5 kg/hectare, and in case of more mature larvae -- from 0.6 to 0.8 kg/hectare. To destroy young larvae, the wheat should be treated with metatione towards the end of the blooming period, at the initial phase of the formation of caryopsis. More mature larvae can be controlled by applying the agent at the beginning of milky ripeness of the grain.

UDC 66.095.26

USSR

MOSKALENKO, L. N., AREST-YAKUBOVICH, A. A., Physico-Chemical Institute Imeni L. Ya. Karpov, Moscow

"Anionic Polymerization of Butadiene in Hexamethylphosphorotriamide and the Effect of Metal Compounds From the I and II Group"

Moscow, Doklady Akademii Nauk SSSR, Vol 195, No 6, Dec 70, pp 1370-1372

Abstract: It was found that both the alkali and alkali earth metals form complexes with aromatic hydrocarbons in hexamethylphosphorotriamide [HMPT] and act as initiators for polymerization of butadiene. The polymerization is rapid, accompanied by considerable evolution of heat. To obtain polymers whose microstructure is temperature dependent the monomer was added through a gas phase at a pressure of 10-15 mm Hg into a thermostated reactor equipped with a magnetic stirrer. Experimental data showed that polymers obtained in this way had identical microstructure, while those obtained in polar solvents showed a strong dependence on the anti-ion. This indicates that polymerization in HMPT occurs by the free ion mechanism. The fact that molecular weight

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USSR

MOSKALENKO, L. N., et al., Doklady Akademii Nauk SSSR, Vol 195, No 6, Dec 70, pp 1370-1372

of the polymers is close to the theoretically calculated value shows that HMPT does not act as chain transmitter. It was determined that with polymerization of butadiene on free anions the 1-2 bonds predominate in the chain, while cationic polymerization leads to predominance of 1-4 bonds.

2/2

USSR UDC 577.1:615.7/9

ARETINSKIY, B. V., YASTREBOV, A. P., KHAMIDULLIN, A. F., and SYRNEV, V. A.

"Changes in Protein Synthesis and Bioenergetics in Rat Lung Tissue After Exposure to a Combination of Quartz Dust and Diesel Exhaust Gases"

Tr. Tsentr. n.-i. proyekt.-konstrukt. in-ta profilakt. pnevmonokoniozov i tekhn. bezopasn. (Works of the Central Research and Design Institute for the Preven of Pneumoconiosis and Accidents), 1971, No 5, pp 117-122 (from RZh-Biologicheskaya Khimiya, No 24, Dec 72, Abstract No 24 F2270)

Translation: Exposure of rats treated with quartz dust to diesel exhaust gases for 1 month resulted in slight stimulation of the energy processes in lung and liver mitochondria and preservation of the normal level of incorporation of 1-C^{14}-glycine into the proteins of these tissues. Exposure to the gases for 3 months markedly reduced both the intensity of the energy processes in the mitochondria and the incorporation of glycine into the proteins of liver and lung tissues.

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USSR

UDC 577.1:615.7/9

ARETINSKIY, B. V. and VAYTSMAN, L. B.

"Age-Related Changes in Excretion of 17-Ketosteroids With Urine in Intact White Rats and in Rats Exposed to Quartz Dust"

Tr. Tsentr. n.-i. proyekt.-konstrukt. in-ta profilakt. pnevmonokoniozov i tekhn. bezopasn. (Works of the Central Research and Design Institute for the Prevention of Pneumoconiosis and Accidents), 1971, No 5, pp 150-154 (from RZh-Biologicheskaya Khimiya, No 24, Dec 72, Abstract No 24 F2269 by D. M. Glukharev)

Translation: Silicosis was induced in 3- 24-month-old rats by intratracheal injection of 75 mg of a suspension of fine quartz dust in 0.6 ml of physiologic saline. The excretion of 17-ketosteroids (17-K) with urine was found to increase with age in the intact rats: from 0.053 mg/day at age 3 months to 0.103 mg/day at age 12 months, after which it decreased (0.07 mg/day at age 24 months). Rats exposed to quartz dust at an early age (6 months) reacted with an increase in secretion of 17-K with urine. Mature animals (12 months), however, showed only an insignificant increase.

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USSR

UDC 533.9.07

ARETOV, G. N., VASIL'YEV, V. I., LOTOTSKIY, A. P., and SKVORTSOV, YU. V.

"Parameters of the Nitrogen Plasma Jet of a Heavy-Current Pulse Accelerator"

Leningrad, Zhurnal Tekhnicheskoy Fiziki, No 11, Nov 73, pp 2324-2331

Abstract: Experiments on the generation of a jet of nitrogen plasma in a coaxial accelerator with a quasi-steady plasma focus are described. Devices of this kind make it possible to obtain streams of ionized gas with a high directed velocity, as well as high-temperature zones with dense plasma. The discharge current reached 500 ka at a voltage in the condenser battery of up to 10 kv. The parameters of the obtained plasma were measured. Its density attained $6 \cdot 10^{17}$ cm^{-3}, the velocity in the front was $1.5 \cdot 10^{7}$ cm/sec, the energy of the plasma stream amounts to about 4 kilojoules. The tendency of change of the plasma density in the focus in relation to the initial conditions is ascertained. 8 figures. 11 references.

1/1

USSR- UDC: 621.391:519.27

ARGANOVSKIY, K. Yu., Northwest Polytechnical Correspondence Institute

"Radio Systems for Data Transmission. Theoretical Fundamentals and Principles of Construction. A Textbook"

Radiotekhnicheskiye sistemy peredachi informatsii. Osnovy teorii i printsipy postroyeniya (cf. English above), Leningrad, 1970, 254 pp, ill. 1 r. 35 k. (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12A23 K)

Translation: The book is a textual aid written especially for radio students at the Northwest Polytechnical Correspondence Institute; it is based on lectures given by the author. The book is made up of five chapters: "Fundamentals of the Theory of Data Transmission", "Introduction to the Theory of Fluctuation Processes", "Fundamentals of the Theory of Signal Detection", "Elements of the Theory of Optimum Filtration and Prediction", and "Radio Systems for Data Transmission". N. S.

1/1

USSR

UDC 543.70

CHERKESOV, A. I., ARGISHEVA, A. I., ASTAKHOVA, N. K., KONYAKHINA, A. A., Saratov State Pedagogic Institute

"Spectrophotometric Study of Complex Formation of Thorium with Bromophthalexon-S and n-Xylenolphthalexon-S"

Ivanovo, Izvestiya Vysshikh Uchebnykh Zavedeniy, Khimiya i Khimicheskaya Tekhnologiya, Vol XIV, No 7, 1971, pp 999-1002

Abstract: Oxyaminopolycarboxylic acids of the triphenylmethane series are widely used in analytical chemistry as reagents for the ions of many metals [V. G. Brudz', et al, Trudy IRYeA, No 30, 145, 1967]. A study is made here of the complex formation of thorium with new representatives of this series of compounds: 3,3'-bis'N,N'-di(carboxymethyl)aminomethyl-5,5'-dibromosulfophthaleine (bromophthalexon-S -- I) and 3,3'-bis-N,N'-di(carboxymethyl)aminomethyl-xylenolsulfophthaleine(n-xylenolphthalexon-S -- II). The study was performed spectrophotometrically. A ratio of Th:I = 1:1 was established for pH 1.5-3.0; Th:II = 1:1 for pH 1.8-3.0 and Th:II = 1:2 for pH 4-6. The molar absorption coefficients and pK of the provisional instability constants of the thorium complexes are, respectively: with I, $\varepsilon = 1.91 \cdot 10^4$ and pK = 5.95; with II $\varepsilon_1 = 1.77 \cdot 10^4$ and $\varepsilon_2 = 2.53 \cdot 10^4$; $pK_1 = 4.15$ and $pK_2 = 7.45$. The absorption

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USSR

CHERKESOV, A. I., et al., Izvestiya vysshikh uchebnykh zavedeniy, Khimiya i khimicheskaya Tekhnologiya, Vol XIV, No 7, 1971, pp 999-1002

spectra of the molecular and ionic forms of the two reagents and their complexes with thorium are presented. Formulas are given for the complex formation process, and the mechanism of the reaction is discussed. The thorium complexes with the two reagents can dissociate with respect to some of the carboxyl groups. However, under conditions of constant acidity this has no effect on the optical properties of the solutions of the complexes, and the relations between the various forms of the complexes of one and the same composition remain constant. Thus, the molar absorption coefficients ϵ and pK of the provisional instability constants of the complexes were calculated by the Komar' method [N. P. Komar', Uch. zap., Vol 37, Tr. n.-i. in-ta khimii, Khar'kov University, No 8, 37, 1951].

2/2

ARGUSOV, A.K.

mechanical engineer.

TECHNICAL TRANSLATION

FSTC-HT-23-1064-71

ENGLISH TITLE: Technological Service Operation for Increasing Engine Operation Time Before Major Overhaul

FOREIGN TITLE: Rabota Tekhnologicheskoy Sluzhby po Povysheniyu Motoresursa

AUTHOR: A. K. Argusov, Chief Technologist

SOURCE: Standarty i Kachestvo, No. 10, 1970, pp 56-57

Translated for FSTC by Leo Kanner Associates

USSR

ARIEL', B., Candidate of Medical Sciences, Central Scientific Research Institute of Sanitary Education

"In the Rhythm of the Universe"

Dushanbe, Kommunist Tadzhikistana, 5 Jan 73, p 4

Abstract: Periodic fluctuations in the nature are so conspicuous that they were observed in ancient times. Diurnal fluctuations in body temperature and blood pressure reach a peak at about 5 P.M. in day-life animals and are shifted by a 12-hr interval in night-life animals. Similarly, many flowers close their petals at night and open them in the day. However, even when the flowers are kept in darkness continuously, the rhythmic process continues, and therefore the factor controlling the rhythm must be endogenous, even though nothing else is known about it. Annual cycles, such as winter hibernation, also take place when the animals are kept in artificial surroundings with a constant temperature and an illumination lasting 12 hrs for each 24 hrs throughout the year. However, by introducing gradual changes in temperature and illumination, it is possible to elicit desirable modifications in animals and plants. Thus, the growth time of carps can be shortened by a factor of 4, the growth rate of wool on sheep can be accelerated by 50%, the output of eggs by hens can be

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USSR

ARIEL', B., Kommunist Tadzhikistana, 5 Jan 73, p 4

increased by a factor of 3, the period of pregnancy can be shortened in many animals, and production of biologically active substances by herbs can be considerably increased. The study of biological rhythms in man, animals, and plants constitutes a new science known as biorhythmology. It recently yielded the information that at different hours of the day the human body reacts somewhat differently to drugs and surgery. Accordingly, there is a trend now to schedule administration of drugs and performance of surgery at the most advantageous hour of the day.

2/2

USSR UDC: 539.172.12

AZIMOV, S. A., ARIEKHANOV, U. R., GULYAMOV, M., ISLAMOV, B. I., ISKHAKOV, T., FAYZULLAYEV, U. I., ERGASHOV, E., Institute of Nuclear Physics, Academy of Sciences of the Uzbek SSR

"The Reaction $^{7}Li(pn)^{7}Be$ at $E_p = 17.5$ MeV"

Moscow, Izvestiya Akademii Nauk SSSR: Seriya Fizicheskaya, Vol 36, No 1, Jan 72, pp 173-174

Abstract: The neutron spectrum of the reaction $^{7}Li(pn)^{7}Be$ is studied on a proton beam in the U-150 cyclotron at the Institute of Nuclear Physics at the Academy of Sciences of the Uzbek SSR, using a multichannel, fast-neutron, time-of-flight spectrometer. The measurements were made at a proton energy of 17.5 MeV. The experimental data enabled the authors to distinguish neutron groups n_0 and n_1 corresponding to the ground and excited states of ^{7}Be ($E^* = 0.43$ MeV). Differential cross sections of the reaction are presented, with formation of neutron groups corresponding to the ground and excited states ($E_1^* = 0.43$ MeV and $E_2^* = 4.55$ MeV). All curves have a

USSR

AZIMOV, S. A. et al., IAN SSSR: Ser. Fiz., No 1, 1972, pp 173-174

diffraction structure with a first maximum at $\theta = 0°$ for n_0 and n_1 and a first maximum at $\theta = 20°$ for group n_2. The curves for n_1 and n_2 are antisymbatic. Three figures, bibliography of six titles.

2/2

USSR UDC 621.039.51

ARIFMETCHIKOV, Ye. F.

"Calculation of Unstable Processes in a Nuclear Installation with Gas Cooling"

Fiz. Yadern. Reaktorov [Nuclear Reactor Physics -- Collection of works], No 2, Moscow, Atomizdat Press 1970, pp 62-75 (translated from Referativnyy Zhurnal--Yadernyye Reaktory, No 3, 1971, Abstract No 3.50.70)

Abstract: A universal and effective algorithm is suggested for numerical calculation of unstable processes in nuclear reactors with gas coolant when there is heat exchange between the gas and walls of the channel having internal sources (heat sinks). Its universality is determined to a significant extent by independence of the type, magnitude, localization, and mutual interference of perturbations causing some specific process, while its effectiveness results from sequential application of the method of "passing" for the solution of systems of implicit finite-difference equations, approximating the differential equations of gas dynamics and heat conductivity. The method suggested allows calculation of unstable processes caused by various perturbations arising in the loop of the reactor: leakage

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USSR

ARIFMETCHIKOV, YE. F., Fiz. Yadern. Reaktorov, No 2, Moscow, Atomizdat Press 1970, pp 62-75

of a loop, power failure to circulators, functioning of protective devices (additional feed to a loop, "repair" of leaks, etc), power changing modes of the reactor and steam generator. It can be used as a convenient basis for any more general algorithm, including calculation of practically all important unstable processes in the gas cooled reactor. 2 figures, 9 biblio. refs.

2/2

USSR

UDC 621.039.51

ARIFMETCHIKOV, YE. F.

"A Set of Programs for Investigation of Unstable Processes in a Nuclear Installation with Gas Coolant (Isothermal Approximation)"

Fiz. Yadern. Reaktorov (Nuclear Reactor Physics -- collection of works), No 2, Moscow, Atomizdat Press 1970, pp 224-228 (from Referativnyy Zhurnal Yadernyye Reaktory, No 3, 1971, Abstract No 3.50.69)

Translation: Unstable processes in nuclear reactors with gas cooling have certain peculiarities resulting from the specifics of the gas coolant. For example, in case of a leak in the gas loop, the stable distributions of pressure and flow rate of gas are practically instantaneously deformed, changing the cooling mode of the scram system and the mechanical loads on structural elements, which may result in serious damage to the reactor. The possibilities for analytic study of these processes are rather limited and are usually based on very simplified models. In order to produce more precise results, it is necessary to use numerical methods of calculation. The principal requirement placed on an

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USSR

AFRIMETCHIKOV, YE. F., Fiz. Yadern. Reaktorov, No 2, Moscow, Atomizdat Press 1970, pp 224-228 (from Referativnyy Zhurnal Yadernyye Reaktory, No 3, 1971, Abstract No 3.50.69)

algorithm for numerical calculation of the processes in question are the requirements of universality and economy. By universality of the calculation algorithm, we mean independence on the type, magnitude, localization, time of development, and mutual interference of perturbations causing the unstable process, while economy refers to calculation time with fixed accuracy. A description is presented of an algorithm for calculation of unstable processes in the isothermal approximation for single and multiple loop nuclear reactors. 6. biblio. refs.

2/2

USSR UDC 621.039.51

ARIFMETCHIKOV, Ye. F.

"Calculation of Unstable Processes in a Nuclear Installation with Gas Cooling"

Fiz. Yadern. Reaktorov [Nuclear Reactor Physics -- Collection of works], No 2, Moscow, Atomizdat Press 1970, pp 62-75 (translated from Referativnyy Zhurnal--Yadernyye Reaktory, No 3, 1971, Abstract No 3.50.70)

Abstract: A universal and effective algorithm is suggested for numerical calculation of unstable processes in nuclear reactors with gas coolant when there is heat exchange between the gas and walls of the channel having internal sources (heat sinks). Its universality is determined to a significant extent by independence of the type, magnitude, localization, and mutual interference of perturbations causing some specific process, while its effectiveness results from sequential application of the method of "passing" for the solution of systems of implicit finite-difference equations, approximating the differential equations of gas dynamics and heat conductivity. The method suggested allows calculation of unstable processes caused by various perturbations arising in the loop of the reactor: leakage 1/2

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ARIFMETCHIKOV, YE. F., Fiz. Yadern. Reaktorov, No 2, Moscow, Atomizdat Press 1970, pp 62-75

of a loop, power failure to circulators, functioning of protective devices (additional feed to a loop, "repair" of leaks, etc), power changing modes of the reactor and steam generator. It can be used as a convenient basis for any more general algorithm, including calculation of practically all important unstable processes in the gas cooled reactor. 2 figures, 9 biblio. refs.

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USSR

UDC 621.039.51

ARIFMETCHIKOV, YE. F.

"A Set of Programs for Investigation of Unstable Processes in a Nuclear Installation with Gas Coolant (Isothermal Approximation)"

Fiz. Yadern. Reaktorov (Nuclear Reactor Physics -- collection of works), No 2, Moscow, Atomizdat Press 1970, pp 224-228 (from Referativnyy Zhurnal Yadernyye Reaktory, No 3, 1971, Abstract No 3.50.69)

Translation: Unstable processes in nuclear reactors with gas cooling have certain peculiarities resulting from the specifics of the gas coolant. For example, in case of a leak in the gas loop, the stable distributions of pressure and flow rate of gas are practically instantaneously deformed, changing the cooling mode of the scram system and the mechanical loads on structural elements, which may result in serious damage to the reactor. The possibilities for analytic study of these processes are rather limited and are usually based on very simplified models. In order to produce more precise results, it is necessary to use numerical methods of calculation. The principal requirement placed on an

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USSR

AFRIMETCHIKOV, YE. F., Fiz. Yadern. Reaktorov, No 2, Moscow, Atomizdat Press 1970, pp 224-228 (from Referativnyy Zhurnal Yadernyye Reaktory, No 3, 1971, Abstract No 3.50.69)

algorithm for numerical calculation of the processes in question are the requirements of universality and economy. By universality of the calculation algorithm, we mean independence on the type, magnitude, localization, time of development, and mutual interference of perturbations causing the unstable process, while economy refers to calculation time with fixed accuracy. A description is presented of an algorithm for calculation of unstable processes in the isothermal approximation for single and multiple loop nuclear reactors. 6. biblio. refs.

2/2

USSR UDC 621.039

ARIFMETCHIKOV, Ye. F.

"Effective Method for the Numerical Calculation of Nonstationary Thermal Processes in Installations With a Complex Communications Structure"

V sb. Fiz. yadern. reaktorov (Physics of Nuclear Reactors -- Collection of Works), No 2, Moscow, Atomizdat, 1970, pp 76-81 (from RZh-Fizika, No 4, Apr 71, Abstract No 4V600)

Translation: The first-order partial differential equation describing energy transfer by the coolant over the circuit of a multiloop installation in which the nuclear reactor is the general section of the circuit and the core consists of several parallel channels is approximated with a grid equation. Two absolutely stable implicit difference schemes are proposed which are not restricted by a limited relationship between the space and time steps, as occurs in explicit schemes. The first scheme is universal, since it is applied in the case of a variable direction of circulation, uses a three-point structure, and is solved by the dispersion method. The second scheme is specific and is applied to the case with a fixed direction of circulation, uses a two-point structure, and is solved by the running count method. D. M. Petrunin.

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USSR UDC 621.039

ARIFMETCHIKOV, Ye. F.

"On the Calculation of Nonstationary Processes in a Nuclear Installation With Gas Cooling"

V sb. Fiz. yadern. reaktorov (Physics of Nuclear Reactors -- Collection of Works), No 2, Moscow, Atomizdat, 1970, pp 62-75 (from RZh-Fizika, No 4, Apr 71, Abstract No 4V595)

Translation: A universal algorithm is proposed for the numerical calculation of nonstationary gasdynamic and thermal processes in the circuit of a gas-cooled nuclear reactor in the presence of heat exchange between the gas and the channel walls which have internal heat sources. The universality of the algorithm is determined by its independence of the type, magnitude, localization, and mutual interference of perturbations causing some process (unsealing of the circuit, stopping the current in the circulator ducts, changing the power of the reactor or steam generator, etc.). The effectiveness is ensured by consecutive use of the sweep method for the solution of systems of implicit finite difference equations approximating the differential equations of gasdynamics and heat conductivity. The stability of the difference

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USSR

ARIFMETCHIKOV, Ye. F., Fiz. yadern. reaktorov (Physics of Nuclear Reactors -- Collection of Works), No 2, Moscow, Atomizdat, 1970, pp 62-75 (from RZh-Fizika, No 4, Apr 71, Abstract No 4V595)

schemes of the equations is investigated and it is shown that the stability criterion obtained under the usual parameters for a nuclear reactor circuit is 2 orders of magnitude less rigid than the corresponding condition for an explicit scheme. The algorithm is achieved in the form of the ART-20 program in ALGOL-60 language and can also be successfully used to calculate nonstationary processes in reactors with water and liquid metal coolants. D. M. Petrunin.

2/2

USSR

UDC 621.382.233

ARIEGV, A.A., MUSAYEV, E. A., SAFAROV, A.

"Current-Voltage Characteristic Of Silicon Tunnel Diodes With Large Current Density"

[Nauchn. tr.]Tashkent. politekhn. in-t ([Scientific Works] Tashkent Polytechnical Institute), 1970, No 65, pp 312-315 (from RZh--Elektronika i yeye primeneniye, No 11, November 1970, Abstract No 11B91)

Translation: The second ascending branch was studied of the current-voltage characteristic of tunnel p-n junctions of n-Si and p-Si. Abnormally large values were observed of the pre-exponential factor I_{02} and the coefficient of β_2 in the index of the exponent of the current-voltage characteristic. As the base material, n-Si doped with As ($7 \cdot 10^{19}$ cm^{-3}), P (8.5×10^{19} cm^{-3}), and p-Si, doped with B (1.5×10^{20} cm^{-3}) were used. The emitter alloys were Al plus B, Sn plus P, Au plus As, Cu plus In plus B. On the basis of the dependence of the parameters of the exponents on the minimum current density, it was concluded that the excess current determines the character of the dependence of the total current on the voltage. 1 ref. I.B.

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Acc. Nr: AP0043674 A Ref. Code: UR 0056

PRIMARY SOURCE: Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, 1970, Vol 58, Nr 2, pp 568-572

ON SYNCHRONIZATION OF CLOCKS IN THE GENERAL RELATIVITY THEORY

L. Ya. Arifov, N. S. Bespalova

The possibility of a global description of space-time relations in the four-dimensional continuum of the theory of relativity is investigated. For this purpose a time function and space equation as hypersurfaces of simultaneous points are introduced.

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REEL/FRAME
19770078

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USSR

UDC 535.231.4

ARIFOV, U. A., RAKHIMOV, R. R., VERGUN, V. R., and KOVRYAZHENKOV, I. M., Electronics Institute, Academy of Sciences Uzbek SSR

"Variations in the Emissivity of a Surface During Bombardment With Atomic Oxygen Ions"

Tashkent, Izvestiya Akademii Nauk Uzbekskoy SSR, Seriya Fiziko-Matematicheskikh Nauk, No 3, 1973, pp 73-76

Abstract: The article describes results of a study of the effect of atomic oxygen ion fluxes on the emissivity of the surface of an enamel coating with an emittance of $\epsilon = 0.9$ in the 100-ev energy region. The instrument used for the study differed from one previously used by the authors for molecular fluxes in the design of the ion source and in a somewhat different measurement sequence. It was found that bombardment with atomic oxygen ion fluxes leads to an increase in the emissivity of the surface. A comparison of the results obtained for the case of bombardment with molecular and atomic fluxes showed that the change in ϵ of the coating is identical in character, differing only in the quantitative values for the same flux density. Ionic bombardment

1/2

USSR

ARIFOV, U. A., et al., Izvestiya Akademii Nauk Uzbekskoy SSR, Seriya Fiziko-Matematicheskikh Nauk, No 3, 1973, pp 73-76

with atomic fluxes is less effective: the emissivity of the coating reaches the maximum after a longer time interval, and the value of the maximum for $\mathcal{E}$ is appreciably less than in the case with molecular fluxes.

2/2

USSR

UDC: 539.216.22:546.28+535.215

ABDULLAYEV, N., AYUKHANOV, A. Kh., ARIFOV, U. A., Institute of Electronics of the Academy of Sciences of the Uzbek SSR

"Influence of Electron Bombardment on the Anomalous Photovoltage Effect in Germanium and Silicon Films"

Tashkent, Izvestiya Akademii Nauk UzSSR, Seriya Fiziko-Matematicheskikh Nauk, No 2, 1973, pp 34-36

Abstract: The authors study the effect of electron bombardment on the photoelectric characteristics of semiconductor films which generate anomalously high photovoltages. The primary electron energy was up to 10 kev with a beam density of 1 $\mu a/cm^2$. The bombardment was done and the measurements were made in a vacuum of 10^{-6} mm Hg. The change in the generated photovoltage V and resistance R was measured separately in each of five sections of 2 mm length on the specimens. It was found that electron bombardment decreases V considerably for critical energies of up to about 2 kev for silicon films, and up to about 100 ev for germanium. The recovery time for V increases with electron energy and radiation dose. There was no appreciable reduction in R for the given energy range at

USSR

ABDULLAYEV, N. et al., Izvestiya Akademii Nauk UzSSR, Seriya Fiziko-Matematicheskikh Nauk, No 2, 1973, pp 34-36

doses of up to 10^4 μcb/cm^2. When the primary electron energy is increased past 2 kev for silicon and 100 ev for germanium, V decreases even more, there is a noticeable reduction in R, and V and R do not recover their initial values in a vacuum. When the films are held in air, there is a gradual increase in V and R. At primary electron energies of more than 5 kev for silicon and 500 ev for germanium, V disappears and R is reduced by 2-3 orders of magnitude. A physical interpretation is given for the mechanism responsible for the observed effects.

2/2

USSR

UDC: 537.533

ARIFOV, U. A., MUKHAMADIYEV, E. S., PARILIS, E. S., and PASYUK, A. S.,
Joint Institute of Nuclear Research, Dubna

"Identification of Multicharge Ions from the Electron Emissions They Cause"

Leningrad, Zhurnal Tekhnicheskoy Fiziki, No 2, 1973, pp 375-379

Abstract: In the analysis of an ion beam with a mass analyzer the ions are divided in accordance with their mass/charge ratios. In such a beam, however, there are ion pairs of the same or similar ratio, thus giving rise to the problem of quantitatively identifying the ions making up these pairs. In an earlier paper one of the authors named above (Parilis, E. S., Reprint of the OIYaI, R7-335, Dubna, 1967) proposed a method for identifying such multicharge ions from the potential electron emission from metals they produce. The function of the present article is to explain briefly the mechanism of the electron emission and the theory behind the identification method and to give the method and results of experimental research conducted by the LYaR OIYaI (Nuclear Reactions Laboratory of the Joint Institute of Nuclear Research) in Dubna.
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USSR UDC: 537.533

ARIFOV, U. A., et al, Zhurnal Tekhnicheskoy Fiziki, No 2, 1973, pp 375-379

A diagram of the experimental equipment and curves for its results are presented. The authors express their gratitude to Academician G. N. Flerov and Ye. D. Vorob'yev for their support and to Yu. P. Tret'yakov and R. I. Ivannikov for their assistance.

2/2

1/2 015 UNCLASSIFIED PROCESSING DATE--09DEC70

TITLE--EFFECT OF P TOLUALDEHYDE ON THE LIQUID PHASE OXIDATION OF P XYLENE IN THE PRESENCE OF COBALT SALTS -U-

AUTHOR-(05)-ARIKO, N.G., MITSKEVICH, N.I., LASHITSKIY, V.A., BUSLOVA, M.K., KOVALEKOV, M.D.

COUNTRY OF INFO--USSR

SOURCE--NEFTEKHIMIYA 1970, 10(1), 48-53

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ALDEHYDE, OXIDATION, XYLENE, COBALT COMPOUND, CARBON DIOXIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1992/1886 STEP NO--UR/0204/70/010/001/0048/0053

CIRC ACCESSION NO--AP0112866

UNCLASSIFIED

2/2 015 UNCLASSIFIED PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0112866

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ADDN. OF 4.5-10.5 MOLE PERCENT P TOLUALDEHYDE INCREASED THE RATE OF OXIDN. AT 120DEGREES OF P XYLENE CONTG. 2 TIMES 10 PRIME NEGATIVE3 MOLE-L. CO STEARATE. AS THE AMT. OF ALDEHYDE WAS INCREASED, EVOLVED CO SUB2 INCREASED LINEARLY, ALDEHYDE CONTENT REMAINED CONST., AND ACID AND ETHER FORMATION INCREASED UP TO 0.58 MOLE-L. ALDEHYDE ADDED, AND REMAINED CONST. THEREAFTER. TAGGED ALDEHYDE EXPTS. SHOWED THAT CO SUB2 EVOLUTION OCCURRED BY DECOMPN. OF PERTOLUIC ACID FORMED BY OXIDN. OF THE ALDEHYDE. USE OF BZH UNDER THE SAME CONDITIONS ALSO GAVE AN INCREASE IN RATE OF FORMATION OF P TOLUIC ACID AND CO SUB2; THE FORMER BECAME CONST. AT 0.2 MOLE-L. ALDEHYDE, THE LATTER AT 0.4. FACILITY: INST. FIZ. ORG. KHIM., MINSK, USSR.

UNCLASSIFIED

1/2 010 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--LIQUID PHASE CATALYTIC OXIDATION OF P XYLENE IN MIXTURES WITH CUMENE -U-

AUTHOR-(03)-ARIKO, N.G., MITSKEVICH, N.I., USKOV, I.I.

A

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK BELORUSS. SSR 1970, 14(2), 141-3

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CATALYTIC OXIDATION, XYLENE, CUMENE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1997/1122 STEP NO--UR/0250/70/014/002/0141/0143

CIRC ACCESSION NO--AT0119976

UNCLASSIFIED

2/2 010 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AT0119976

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SIX SUBJECT MIXTS. CONTG. 0-100PERCENT P XYLENE AND 2.1 MILLIMOLE PER L. CO STEARATE WERE TREATED AT 120DEGREES PER 1 ATM WITH O 2.5 HR. MAX. O ABSORPTION OCCURRED AT 80 WT. PERCENT XYLENE, AND MAX. CO SUB2 FORMATION AT 50PERCENT. INDUCTION TIMES FOR PURE XYLENE AND CUMENE WERE 37 AND 1.5 MIN, RESP.; THE MIXTS. WERE INTERMEDIATE. WT. PERCENT THEORETICAL YIELD OF P TOLUIC ACID RANGED FROM 86PERCENT FOR 90-100PERCENT XYLENE TO 44PERCENT FOR 20PERCENT XYLENE. THEREFORE, THE CUMENE CONTENT SHOULD NOT EXCEED 10PERCENT FOR HIGH SELECTIVITY IN OXIDN. TO THE ACID. FACILITY: INST. FIZ.-ORG. KHIM., MINSK, USSR.

UNCLASSIFIED

USSR UDC: 681.3.02

ARIN', E. I., KATSNEL'SON, L. Z.

"Structure and System of Commands of the Series GE-400 Computer"

Tr. 3-y Zimney shkoly po mat. programmir. i smezhnym vopr., 1970. Vyp. 1 (Works of the Third Winter School on Mathematical Programming and Related Problems, 1970, No 1), Moscow, 1970, pp 66-69 (from RZh-Kibernetika, No 7, Jul 71, Abstract No 7V676)

[No abstract]

1/1

USSR

UDC: 547.944/945

OSMANOV, U., ARIPOV, Kh. N., SHAKIROV, T. T., "Order of the Red Banner of Labor" Institute of the Chemistry of Plant Materials

"Isolation of Vincanine and Vincanidine From the Roots of Vinca Erecta"

Tashkent, Khimiya Prirodnykh Soyedineniy, No 3, 1973, pp 442-443

Abstract: The usual method used for extracting vincanine and vincanidine from Vinca erecta leaves almost all the vincanidine on the cation exchange resin and requires considerable expenditures of solvent and time for removal. A procedure is developed for extraction by which the vincanine yield is increased by 10% over the conventional method and a satisfactory yield of vincanidine is obtained. Pulverized roots of V. erecta are treated by extraction with H_2SO_4, the extract is alkalized with concentrated NH_4OH to pH 8-8.5 and the alkaloids are extracted with chloroform. The chloroform sum is evaporated and phenol alkaloids are extracted with 5% NaOH. The alkali solution is acidified with 10% H_2SO_4, washed once with ethyl ether, alkalized with NH_4OH to pH 8-8.5, and phenol alkaloids are extracted with ethyl ether. As the ether condenses, vincanidine crystals precipitate in the amount of 70% of the content in the raw material. The nonphenol alkaloids are transferred from chloroform to 10%

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USSR

OSMANOV, U., et al., Khimiya Prirodnykh Soyedineniy, No 3, 1973, pp 442-443

H_2SO_4, alkalized to pH 8-8.5 and extracted with benzene. Evaporation of the benzene solution yields vincanine in the amount of 85% of the content in the raw material.

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USSR UDC 547.944.3

BABAYEV, B., ARIPOV, Kh. N., and SHAKIROV, T. T., "Order of the Red Banner of Labor" Institute of the Chemistry of Plant Materials, Academy of Sciences of the Uzbek SSR

"Polybuffer Separation of the Alkaloid Sum from Petillium Radiana"

Tashkent, Khimiya Prirodnykh Soyedineniy, No 6, 1970, p 776

Abstract: The authors isolate the alkaloids remaining in the mother liquor of Petillium radiana alkaloids after separation of imperialine, edpetiline, petiline, petilidine, petilidinine and petilinine. The mother liquor was dissolved in chloroform, filtered and passed through a polybuffer installation. In addition to the above-mentioned alkaloids, three bases were isolated: base A (pH 7.0, 6.5, R_f 0.15 in chloroform-butanol, ethylacetate (10:2:1)), base D (pH 5.5, 5.0, R_f 0.36 in chloroform-methanol (7:1)), and base V which is a crystalline mixture of two bases (pH 1.0, R_f 0.27 and 0.39 in petroleum ether-chloroform-ethanol (10:1:1)).

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USSR UDC 547.944/1

RAKHIMOV, D. A., SHARIPOV, M. R., ARIPOV, Kh. N., MALIKOV, V. M., SHAKIROV, T. T., and YUNUSOV, S. Yu., "Order of the Red Banner of Labor" Institute of the Chemistry of Plant Materials, Academy of Sciences, Uzbek SSR

"Polybuffer Separation of Vinca Erecta Alkaloids"

Tashkent, Khimiya Prirodnykh Soyedineniy, No 6, 1970, pp 713-717

Abstract: The complex alkaloid mixture from vinca erecta was separated by alkalinity on a special polybuffer separating unit. The mixture of alkaloids in an organic solvent was passed in sequence through a number of phosphate buffer solutions with different pH values arranged in order of increasing pH. The use of this method results in distribution of the alkaloids into fractions containing 3-6 bases apiece. The following bases were isolated in addition to previously identified alkaloids: ervincidine, apovincamine, (+)-quebrachamine, dl-eburnamine, (-)-1,2-dehydroaspidospermidine and copsanone. This is the first time that these bases have been derived from this plant. Ten or twelve other unidentified alkaloids were also detected by thin-layer chromatography. The region of passage of some alkaloids into the buffer solutions is established.

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1/2 006 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--VINCANINE ADSORPTION PROCESS -U-

AUTHOR-(02)-ARIPOV, KH.N., SHAKIROV, T.T.

COUNTRY OF INFO--USSR

SOURCE--UZB. KHIM. ZH. 1970, 14(2), 84-6

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--PROCESSED PLANT PRODUCT, CATION EXCHANGE RESIN, CHEMICAL PURIFICATION/(U)KUI CATION EXCHANGE RESIN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3008/0006 STEP NO--UR/0291/70/014/002/0084/0086

CIRC ACCESSION NO--AP0137205

UNCLASSIFIED

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002200210015-8"

2/2 006 UNCLASSIFIED PROCESSING DATE--27NOV70
CIRC ACCESSION NO--AP0137205
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A SERIES OF CATION RESINS WAS EVALUATED AS TO THEIR ADSORPTION EFFICIENCY FOR VINCANINE (I) FROM VINCANINE HCL (II) SOLNS. AND FROM VINCA ERECTA (III) ROOT EXTS. HIGHEST YIELDS OF I WERE OBTAINED IN EXTNS. ON A KU 1 CATION RESIN (GRAIN SIZE 0.25-0.50 MM) USING A SOLN. CONCN. OF II 0.84 MG-ML AND A FLOW RATE OF 20 ML-MIN. A BATTERY OF 4 ADSORBERS (20 CM DIAM.) PACKED TO HEIGHTS OF 40 CM WITH THE KU 1 RESIN HANDLED SOLNS. CONTG. 0.19 G-L. III AT A THROUGHPUT OF 950 L.-M PRIME2 HR. RESIN SATN. WAS MONITORED COLORIMETRICALLY BY DETG. THE BREAKTHROUGH POINTS. FACILITY: INST.KHIM. RAST. VESHCHESTV, TASHKENT, USSR.

UNCLASSIFIED

USSR

UDC 51:621.391

ARIPOV, M. N., and YUNUSOV, SH. Z.

"'Mass' Probability Distribution of Coded Transmission Distortions"

V sb. Vopr. kibernetiki (Questions in Cybernetics -- Collection of Works), Vyp. 51, Tashkent, 1972, pp 162-166 (from RZh-Matematika, No 3, Mar 73, Abstract No 3V465 by Yu. PYATOSHINO)

Translation: The article presents an experimental histogram for variations in the length of a pulse transmitted over a certain communication channel and presents a formula for its approximation. This permits an evaluation of the probability of erroneous reception.

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USSR

ARIPOV, M. N., YUNUSOV, Sh. Z.

"Distribution of Probabilities of the "Mass" of Distortions of Code Samples"

Vopr. Kibernetiki [Problems of Cybernetics -- Collection of Works], No 51, Tashkent, 1972, pp 162-166 (Translated from Referativnyy Zhurnal, Kibernetika, No 3, Moscow, 1973, Abstract No 3 V465 by Yu. Pyatoshin).

Translation: An experimental histogram is presented for the change in duration of a pulse transmitted through a certain communications channel, and a formula is suggested for its approximation. This allows the probability of false reception to be estimated.

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USSR UDC 612.017.1.014.46:615.28

PERELYGIN, V. M., Professor, SHPIRT, M. B., ARIPOV, O. A., and YERSHOVA, V. I., Kirgiz Institute of Epidemiology, Microbiology and Hygiene, Frunze

"The Effect of Some Pesticides on Immunological Reactivity"

Moscow, Gigiyena i Sanitariya, No 12, 1971, pp 29-33

Abstract: Various immunological indexes (agglutinin titers, phagocytosis, peripheral blood, cholinesterase activity, skin test with morphine, protein spectrum, changes in weight, and so forth) were studied dynamically in rabbits and mice poisoned with DDT, TMTD (tetrathion), sevin, or zineb daily for 6 months. Three doses were used: (i) permissible residual amount or dose insufficient to elicit changes, (ii) dose sufficient to detect physiological and biochemical changes, and (iii) toxic dose. Immunobiological reactivity proved to be a fairly sensitive indicator of the effect of pesticides. Changes occurred even after permissible residual amounts, although they were not persistent. After a brief and slight decrease or increase in reactivity, there was a tendency toward normalization. Doses sufficient to cause initial toxic symptoms resulted in decreased phagocytosis of leukocytes and sharp reduction in antibody titers and immunogenic properties of blood serum. Large (toxic) doses usually caused early decompensation and

1/2

USSR

PERELYGIN, V. M., et al., Gigiyena i Sanitariya, No 12, 1971, pp 29-33

immunological reactivity diminished steadily. These changes preceded the appearance of symptoms of specific pathology. The agglutinin titer, protective serum antibodies, leukocytic phagocytosis, and skin test with morphine are the most sensitive indexes of immunological reactivity.

USSR A UDC 539.126.34

AZIMOV, S. A., ARIPOV, R., GULYAMOV, U. G., LOZHKIN, O. V.

"Some Characteristics of the Formation of ^{8}Li Fragments With a π^{-}-Meson Energy of 45 Gigaelectron Volts"

Tashkent, Izvestiya Akademii Nauk Uz SSSR, Seriya Fiziko-Matematicheskikh Nauk, No 3, 1970, pp 52-55

Abstract: This paper contains the results of an experimental investigation of the reactions of formation of ^{8}Li fragments during interaction of π^{-}-mesons, the impulse of which is 45 gigaelectron volts/second, with nuclei of an emulsion. The study of fragmentation in the very high-energy range is of interest in connection with certain hypotheses regarding the mechanism of these phenomena: the assumption of the effect of meson showers on the formation of fragments in nuclear splitting, the concept of shock waves in nuclear matter caused by primary particles, and the hypothesis of intranuclear reactions in clusters caused by cascade nucleons. In the experiment the method of nuclear emulsions was used to obtain maximum information about the characteristics of the formation of ^{8}Li fragments in nuclear 1/3

USSR

AZIMOV, S. A., et al, Izvestiya Akademii Nauk Uz SSSR, Seriya Fiziko-Matematicheskikh Nauk, No 3, 1970, pp 52-55

splitting. Nuclear emulsions of the B-R type were irradiated by a beam of π^--mesons with an energy of 45 gigaelectron volts in the IFVE accelerator.

Investigation of the ionization characteristics of particles leaving T-type tracks in the emulsions demonstated that the B^8 nuclei in these tracks constitute 5 percent for AgBr target nuclei. Out of 306 T-type tracks in four cases there were two electron tracks at the point of decay of the fragment. The probability of formation of T-type tracks in split AgBr nuclei with $N_h > 7$ when considering the geometric corrections turned out to be $0.022 + 0.0014$; the total cross section of formation of ^8Li from AgBr is $(6.4)\pm2)$ millibarns; the cross section of formation of two fragments of ^8Li in one splitting is 0.1 millibarn and ^8Li from light nuclei (C, N, O) $\sim$0.5 millibarns. A figure is presented showing the frequency of formation of ^8Li as a function of the number of beams N_h. Just as for lower energies the cross section of formation of ^8Li depends on the number of strongly ionizing particles in the split, and it

2/3

USSR

AZIMOV, S. A., et al, Izvestiya Akademii Nauk Uz SSSR, Seriya Fiziko-Matematicheskikh Nauk, No 3, 1970, pp 52-55

increases with the number N_{+}. From the data it is noted that the generation of fragments is not connected with the number of relativistic particles. Comparison of the data obtained with the results of investigating ^{8}Li with lower energies of the incident particles (in the vicinity of $E > 10$ gigaelectron volts) reveals certain peculiarities of fragmentation in the given energy range: low variation of the total cross section of formation of ^{8}Li and practical constancy of the parameters determining the kinematic characteristics of ^{8}Li (anisotropy of the angular distribution, statistical parameters of the energy spectrum $\bar{E}$, E_0, σ).

3/3

ARIPOVA, D.F.

Name: Institute of Biophysics, Pushchino

Description:

(U) During this quarterly reporting period, 25 new articles were identified from the Institute of Biophysics, Pushchino. On the basis of these articles, it was possible to identify 32 new personalities with the Institute. These personalities, the subjects of the articles, and the dates are given below:

All-biophysics, physiology

Aliyeva, S. A.	phosphorylation	1971 (34)
Apikayeva, G. F.	radiation effect	1970 (35)
Aripova, D. F.	radiation effect	1971 (36)
Arkipa, Ya. I.	hypoxia	1969 (37)
Bregadze, I. F.	radiation effect	1970 (35)
Bugel, Ye. P.	luminescence	1970 (37)
Dmitriyeva, T. I.	radiation effect	1970 (38)
[illegible] Kriyeva, V. A.	blood plasma	1969 (39)
Domareva, O. F.	radiation effect	1970 (39)
Dubrov, A. P.	biochemical analysis	1971 (42)
Gabelova, N. A.	muscle physiology	1971 (42)
Gamanl, Ye. E.	radiation effect	1970 (35)
Ivkova, M. N.	serum albumin	1971 (43)
Kanatkin, V. S.	phosphorylation	1971 (34)
Khokhlova, G. K.	muscle physiology	1971 (44)
Kiglov, A. N.	salivary gland	1970 (45)
Kiyagina, V. P.	oligonucleotide	1970 (46)
Korol, B. A.	radiation effect	1971 (44)
Koshcleva, G. N.	biochemical analysis	1971 (41)

Kuzina, S. V.	tissue culture	1970 (47)
Markovich, D. S.	lactate dehydrogenase	1971 (48)
Medvedeva, I. F.	radiation effect	1971 (44)
Peshkova, L. V.	phosphorylation	1971 (49)
Pronevich, L. A.	antibiotic	1970 (50)
Radionova, M. A.	mitochondrion	1971 (51)
Shchipakin, V. N.	phosphorylation	1971 (49)
Skobeyev, Ye. M.	radiation/vibration	1970 (52)
Suvorova, A. I.	radiation effect	1970 (35)
Tsvetkov, V. D.	blood plasma	1969 (40)
Usrikhina, N. V.	lactate dehydrogenase	1971 (48)
Vilenchik, M. M.	radiation effect	1970 (53)
Zamyatnin, A. A.	muscle physiology	1971 (42)

Dubrov and Kosheleva (41) are associated with the Laboratory of Cell Biophysics at the Institute. Reference 52 above is of special interest since it presents an investigation of combined stresses, i.e., radiation and vibration. In addition to the above articles, five of the twenty-five (54-58) were authored by persons already identified with the Institute of Biophysics, Pushchino. Reference 55 associates the authors of the article, L. V. Slozhenkina, V. L. Migushina, and A. M. Kuzin, with the Department of Radiobiology at the Institute.

UNCLASSIFIED

USSR UDC 547.944

ARIPOVA, S. F., MALIKOV, V. M., and YUNUSOV, S. YU., Order of the Labor Red Banner Institute of the Chemistry of Natural Products, Acad. UzSSR

"Convolvulus Alkaloids"

Tashkent, Khimiya Prirodnykh Soyedineniy, No 3, 1972, pp 401-402

Abstract: Routine treatment of the roots of Convolvulus erinacius Ldb. yielded cuscohygrine, and when the plant portion of the Convolvulus subhirsutus Rgl. et Schmalh was worked up - only convolvine was isolated.

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1/2 015 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--REFINING OF LINSEED OIL -U-

AUTHOR-(05)-ARTYUNYAN, N.S., ARISHEVA, YE.A., LITVINOVA, YE.D., PETRENKO, YU.A., MNUKHIN, U.YU.

CCUNTRY OF INFO--USSR

SOURCE--MASLO-ZHIR. PROM. 1970, 36(3), 19-21

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--WOOD CHEMICAL PRODUCT, CHEMICAL PURIFICATION, OPTIC PROPERTY, TEST METHOD

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1996/1561 STEP NO--UR/9085/70/036/003/0019/0021

CIRC ACCESSION NO--AP0118544

UNCLASSIFIED

2/2 015 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0118544

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. REFINING OF LINSEED OIL, CONSISTING OF TREATING WITH ACIDS, NEUTRALIZATION WITH NAOH (80 G-L.), AND TREATING WITH ACTIVATED BLEACHING CLAY WAS EXPTL. INVESTIGATED WITH SPECIAL EMPHASIS ON ACID TREATMENT. A COMPARISON WAS MADE BETWEEN REFINING INCLUDING TREATMENT WITH ACIDS, AND REFINING WITHOUT ACIDS. PRELIMINARY TREATMENT OF 3 LINSEED OIL TYPES (PREPD. FROM FLAX FOR SPINNING, FROM FLAX FOR OIL PREPN., AND FROM A FLAX MIXT.) WITH 0.2PERCENT (BASED ON THE AMT. OF OIL) 85PERCENT H SUB3 PO SUB4 OR 93PERCENT H SUB2 SO SUB4 OR WITH THEIR DIL. SOLNS. PROVIDES BETTER ELIMINATION OF PHOSPHATIDES AND AN IMPROVEMENT IN OIL APPEARANCE (LOWER COLOR) AND ITS THERMAL TESTING COMPARED WITH AN UNTREATED OIL SAMPLE.

FACILITY: KRASNODAR. POLITEKH. INST., KRASNODAR, USSR.

UNCLASSIFIED

1/2 013 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--RAPID AMPEROMETRIC DETERMINATION OF PALLADIUM IN PALLADIUM PLATING BATHS -U-

AUTHOR-(04)-ARISHKEVICH, A.M., PITSYK, O.I., ZAMORSKAYA, T.V., USATENKO, YU.I.

COUNTRY OF INFO--USSR

A

SOURCE--ZAVOD. LAB. 1970, 36(3), 265-7

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS, CHEMISTRY

TOPIC TAGS--PALLADIUM, METAL CHEMICAL ANALYSIS, AMPEROMETRIC TITRATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3008/1215 STEP NO--UR/0032/70/036/003/0265/0267

CIRC ACCESSION NO--AP0138230

UNCLASSIFIED

2/2 013 UNCLASSIFIED PROCESSING DATE--04DEC70
CIRC ACCESSION NO--AP0138230
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. WITH A SOLN. OF 3,METHYLDIMERCAPTOTHIOPYRONE (I) IN 0.4M ALKALI AS REAGENT AND GRAPHITE INDICATOR ANODE, 20 MUG TO 1.5 MG OF PD WERE TITRATED IN ACID MEDIUM (FROM PH 4 TO 20N H SUB2 SO SUB4 OF ION HCL) AT 0.4-0.6 V (VS. SCE). THE MOLAR RATIO IS SHOWN ON MICROFICHE. AMPEROMETRIC RESULTS WERE COMPARED WITH GRAVIMETRIC DIMETHYLGLYOXIME VALUES. THE PREPN. OF I IS DESCRIBED. FACILITY: DNEPROPETROVSK. KHIM.-TEKHNOL. INST., DNEPROPETROVSK, USSR.

UNCLASSIFIED

1/2 029 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--ON THE BACKGROUND RADIOEMISSION IN THE INTERVAL OF GALACTIC LONGITUDES I SUPER II EQUALS 20.8 TO 32.8 DEG -U-

AUTHOR--ARISKIN, V.I.

A

COUNTRY OF INFO--USSR

SOURCE--ASTRONOMICHESKII ZHURNAL, VOL. 47, NO. 3, 1970, P. 493-498

DATE PUBLISHED-------70

SUBJECT AREAS--NAVIGATION, ASTRONOMY,ASTROPHYSICS

TOPIC TAGS--RADIO EMISSION, GALAXY, RADIO TELESCOPE, HYDROGEN ION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY FICHE NO----FD70/605013/D03 STEP NO--UR/0033/70/047/003/0493/0498

CIRC ACCESSION NO--AP0140392

UNCLASSIFIED

2/2 029 UNCLASSIFIED PROCESSING DATE--040EC70

CIRC ACCESSION NO--AP0140392

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. OBSERVATION OF THE CONTINUOUS RADIO EMISSION OF THE GALAXY, CARRIED OUT WITH THE 22 M RADIOTELESCOPE OF THE PHYSICS INSTITUTE OF THE USSR ACADEMY OF SCIENCES, IN THE INTERVAL OF LONGITUDES FROM 20.8 TO 32.8 DEG AT 21.1 CM. IT IS ASCERTAINED THAT THE BACKGROUND RADIO EMISSION CONSISTS NOT MERELY OF POPULATION I, BUT IS MADE UP OF TWO COMPONENTS: POPULATION 1 AND DISK POPULATION. A DISK POPULATION IS UNTHERMAL BY ITS ORIGIN; IN THE RANGE FROM 21.1 CM TO 3.5 M ITS SPECTRAL INDEX EQUALS 2.40 PLUS OR MINUS 0.15. IT IS ASSUMED THAT THE MAXIMUM OF THE THERMAL BACKGROUND RADIO EMISSION IN THE DIRECTION I SUPER II EQUALS 25.3 DEG IS CONDITIONED BY RADIO EMISSION OF ONE LARGE SCALE REGION OF IONIZED HYDROGEN.

FACILITY: AKADEMIIA NAUK SSSR, FIZICHESKII INSTITUT, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 621.385.632.01

ARISTARKHOVA, O.N., BORODENKO, V.G., MAL'KOVA, N.YA., PINCHUK, L.A., POBEDONOSTSEV, A.S.

"Optimization On Digital Computer Of Efficiency Of Multisection TWT"

Elektron.tekhnika. Nauch.-tekhn.sb.Elektron. SVCh (Electronics Technology. Scientific-Technical Collection. Microwave Electronics), 1971, Issue 7, pp 111-114 (from RZh--Elektronika i yeye primeneniye, No 11, Nov 1971, Abstract No 11A181)

Translation: The results are presented of an automatic optimization on a digital computer of the efficiency of a traveling-wave tube with a gap [razryv], three-phase discontinuities, and a phase discontinuity of the wave velocity. With values of the amplification parameter C = 0.1, microperveance p_{μ} = 0.8, and loss parameter d = 0.01, the electron efficiency of the optimum version of the TWT which is found amounts to 63 percent. With respect to the characteristics of the interaction mechanism, the version of the TWT considered is close to hybrid devices. Summary.

1/1

1/2 031 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--RELATION BETWEEN RADIATION GENERATION THRESHOLD AND QUANTUM FLUORESCENCE YIELD OF ORGANIC LUMINOPHORS -U-

AUTHOR--ARISTOV, A.V.

A

COUNTRY OF INFO--USSR

SOURCE--LENINGRAD, OPTIKA I SPEKTROSKOPIYA; MARCH 1970, PP 546-549

DATE PUBLISHED----MAR70

SUBJECT AREAS--PHYSICS, CHEMISTRY

TOPIC TAGS--LUMINOPHOR, FLUORESCENCE, IMIDE, THIAZOLE, NEODYMIUM LASER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3003/0266 STEP NO--UR/0051/70/000/000/0546/0549

CIRC ACCESSION NO--AP0129499

UNCLASSIFIED

2/2 031 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0129499

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A STUDY WAS MADE OF THE RELATION BETWEEN THE GENERATION THRESHOLD (I SUBTHR) AND THE QUANTUM FLUORESCENCE YIELD (Y SUBFL) OF CERTAIN ARBITRARY RHODAMINE AND PHTHALIMIDE SOLUTIONS DURING VARIATION OF THE Y SUBFL WITH EITHER THE INTRODUCTION OF FOREIGN FLUORESCENCE EXTINGUISHERS OF VARIATION OF THE SOLVENT. OPTICAL PUMPING WAS ACCOMPLISHED WITH A GIANT PULSE OF THE SECOND HARMONIC OF A NEODYMIUM LASER. IT WAS ESTABLISHED THAT THE RELATIVE VARIATIONS IN MAGNITUDES OF I SUBTHR AND Y SUBFL IN THE TWO CASES REFERRED TO ARE DIFFERENT. THE CHARACTER OF THIS CHANGE IS SUCH THAT IT IS POSSIBLE TO MAKE CERTAIN ASSUMPTIONS REGARDING THE PROCESSES ACCOMPANYING RADIATIONLESS DEACTIVATION OF FLUORESCENT MOLECULES.

UNCLASSIFIED

USSR

UDC 621.373:535

ARISTOV, A. V., VEMBER, T. M., KOZLOVSKIY, D. A., CHERKASOV, A. S.

"Photochemical Method of Determining the Luminous Pumping Energy Absorbed by Rhodamine Dyes Under Conditions of Stimulated Emission"

Leningrad, Optika i Spektroskopiya, Vol 33, No 5, Nov 72, pp 961-965

Abstract: A photochemical method is proposed for determining the quantum light sum absorbed by a rhodamine 6G solution with flash-tube stimulation of emission. The method is based on sensitized photo-oxidation of anthracene compounds in nondeoxygenated solutions by excited molecules of a "generating" organic phosphor. The proposed method is used to determine the limiting coefficient of conversion of optical pumping energy to stimulated emission by ethanol solutions of rhodamine 6G with flash-tube excitation.

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1/2 045 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--STRUCTURE OF EUROPIUM TETRAKIS BENZOYLACETONATE USABLE FOR OBTAINING A LASER EFFECT -U-

AUTHOR-(05)-ARISTOV, A.V., MASLYUKOV, YU.S., GRYAZNOVA, M.I., DOMRACHEV, G.A., ASLANOV, L.A.

COUNTRY OF INFO--USSR

SOURCE--TECH. EKSP. KHIM. 1970, 6(1), 61-6

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, PHYSICS

TOPIC TAGS--EUROPIUM COMPOUND, LUMINESCENCE SPECTRUM, X RAY STUDY, COMPLEX COMPOUND, LASER EFFECT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3002/1176 STEP NO--UR/0379/70/006/001/0061/0066

CIRC ACCESSION NO--AP0128598

UNCLASSIFIED

2/2 045 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0128598

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ET SUB2 NH SUB2 (EU(BZAC) SUB4) AND C SUB5 H SUB11 NH(EU(BZAC) SUB4), WHERE HBZAC EQUALS BENZOYLACETONE AND C SUB5 H SUB11 NH PRIME POSITIVE EQUALS PIPERIDINIUM, WERE SYNTHESIZED BY THE METHOD OF BHAUMIK (1964) AND THEIR LUMINESCENCE SPECTRA WERE TAKEN AT 77DEGREESK. STRUCTURES OF THE COMPDS. AND OF THE (EU(BZAC) SUB4) PRIME NEGATIVE ION WERE DETD. BY X RAY STRUCTURAL ANAL. SPLITTING OF THE GROUND STATE LEVEL FOR THE EU ION CORRESPONDS TO A C SUB2 SYMMETRY BUT IT MAY ALSO BE DUE TO THE C SUB4 SYMMETRY OF THE EUO SUB8 GROUP. BOTH COMPLEXES GIVE A STABLE LASER EFFECT AT 613 NM WHICH CORRESPONDS TO A TRANSFER FROM THE PRIME5 D SUB0 LEVEL TO THE X OR Y COMPONENT OF THE PRIME7 F SUB2 LEVEL SPLIT BY THE CRYST. FIELD OF C SUB2 OR C SUB4 SYMMETRY. FACILITY: MOSK. GUSUNIV., MOSCOW, USSR.

UNCLASSIFIED

USSR UDC: 535.71

ARISTOV, A. V. and VIKTOROVA, Ye. N.

"Determining the Activation Energy of Radiationless Transitions from the Effect of a Solvent on the Luminescence Characteristics of Organic Phosphors"

Moscow, Izvestiya AN SSSR -- Seriya Fizicheskaya, vol 36, No 5, 1972, pp 1074-1077

Abstract: Asserting that a proper study of the mechanism of intramolecular radiationless deactivation of excited molecules cannot be made without determining the energy of activation E_a of radiationless transitions, the authors demonstrate how this can be done. The method they use is based on the correlation between the variation in fluorescence characteristics and the value of E_a for organic phosphors in solutions of different polarities. As objects of the study, they used derivatives of phthalamide and naphthalamide, benzophenozene, stilbene, and diphenyl. The fluorescent and absorption spectra, absolute fluorescent quantum output, and lifetimes of the excited states for these solutions were measured. Variations in these spectra were quite wide, on the order of 3000 cm^{-1}. The authors express their gratitude to T. V. Veselova and V. I. Shirokov for their help in the measurements.

1/1

USSR

UDC: 621.373:535+535.373.2

ARISTOV, A. V., MASLYUKOV, Yu. S.

"Effect of Triplet-Triplet Transfer on the Emission Threshold for Organo-phosphor Radiation"

Leningrad, Optika i Spektroskopiya, Vol 32, No 2, Feb 72, pp 342-345

Abstract: The authors investigate the effect which anthracene additives in ethanol solutions of uranin, unsubstituted rhodamine, and rhodol have on the reduction of induced losses in these solutions in the case of pumping by means of flash tubes. This effect is interpreted as a reduction of triplet ($T \rightarrow T'$) losses resulting from triplet-triplet transfer of energy to the anthracene molecules. When anthracene is introduced in a concentration of 10^{-3} mol/liter into ethanol solutions of unsubstituted rhodamine, an emission threshold is reached which is close to the minimum computed on the assumption of total elimination of $T \rightarrow T'$ losses. Two figures, bibliography of six titles.

1/1

USSR UDC 535.37 + 539.196

ARISTOV, A. V., BAKHSHIYEV, N. G., KUZIN, V. A., and PITERSKAYA, I. V.

"Effect of Orientational Intermolecular Relaxation on Stimulated Emission Spectra of Organic Phosphors"

Leningrad, Optika i Spektroskopiya, Vol 30, No 1, Jan 71, pp 143-147

Abstract: The article suggests a method for a controlled decrease in the mean time spent by molecules in an excited state (t_f) by intensification of stimulated radiative deactivation of excited molecules in a generation mode . The value of t_f is a direct functional of the pump level. This opens up the possibility of reducing the lifetime of excited molecules by intensification of radiative transitions, which differs fundamentally from the method of increasing the probability of radiationless deactivation, and opens up new avenues for the interpretation of

USSR

ARISTOV, A. V., et al., Optika i Spektroskopiya, Vol 30, No 1, Jan 71, pp 143-147

certain spectroscopic and generational phenomena as well as for obtaining new information on the properties of molecules and molecular systems. The new method was used by the authors to study the relationship between the position of the generation spectrum maximum and the extent to which the pump power of the second harmonic of a neodymium giant pulse exceeds the threshold power in glycerol solutions of 3-dimethylamino-6-monomethylamino-N-methylphthalimide in a -65 to + 35° C temperature range. The results confirm the fact that orientational intermolecular relaxation in relaxation times commensurable with the mean time spent by phosphor molecules in an excited state has the same effect on the character of luminescence spectra variation both in a spontaneous and in a stimulated regime. In a subsequent article the authors

2/3

USSR

ARISTOV, A. V., et al., Optika i Spektroskopiya, Vol 30, No 1, Jan 71, pp 143-147

intend to consider the effect of translational intermolecular relaxation on generation spectra.

The authors thank V. I. SHIROKOV and T. V. VESELOVA for fluorometric measurements of τ_f (mean lifetime of molecules in excited singlet state in a spontaneous emission mode).

3/3

USSR

ARISTOV, A. V.; et al

"Relation between Radiation Generation Threshold and Quantum Fluorescence Yield of Organic Luminophors"

Leningrad, Optika i Spektroskopiya ; March, 1970; pp 546-9

Δ Δ Δ

ABSTRACT: A study was made of the relation between the generation threshold (I_{thr}) and the quantum fluorescence yield (Y_{fl}) of certain arbitrary rhodamine and phthalimide solutions during variation of the Y_{fl} with either the introduction of foreign fluorescence extinguishers or variation of the solvent. Optical pumping was accomplished with a giant pulse of the second harmonic of a neodymium laser. It was established that the relative variations in magnitudes of I_{thr} and Y_{fl} in the two cases referred to are different. The character of this change is such that it is possible to make certain assumptions regarding the processes accompanying radiationless deactivation of fluorescent molecules.

The article includes three equations, a table, and two figures. There are 4 references.

USSR

UDC 621.373:530.145.6

ARISTOV, A. V., and MASLYUKOV, Yu. S.

"Analysis of Induced Forced Radiation Generation Losses in Rhodamine Solutions"

Zh. prikl. spektroskopii (Journal of Applied Spectroscopy), Vol 13, No 6, 1970, pp 1002-1005 (from RZh-Radiotekhnika, No 4, Apr 71, Abstract No 4D200)

Translation: The basic components of harmful generation losses of forced radiation arising on excitation of liquid solutions of organic luminophors by flash bulbs are investigated. Alcohol and heavy water solutions of rhodamine were investigated in a broad range of excitation energies. It is demonstrated that the basic causes of induced losses in unpumped alcohol and heavy water solutions of rhodamine 6Zh consist in optical distortion of the resonator and photochemical changes in the solutions. There are 2 illustrations, 1 table and a 5-entry bibliography.

1/1

USSR

UDC: 535.37+535.822.9

ARISTOV, A. V. and POLYAKOV, Ya. S.

"Investigating the Luminescence of Organic Luminophors by the Phosphorescent Microscopy Method"

Minsk, Zhurnal Prikladnoy Spektroskopii, No 2, 1973, p 339, first annotation

Translation: Using a phosphorescent microscope, authors investigated the luminescent characteristics of standard solutions of uranium and unsubstituted rhodamine at a temperature of 88° K. The device used recorded the luminescence spectrum with a quantum output of about 10^{-5}. An extended afterglow of the investigated solutions was detected, the principal part of which was delayed fluorescence. The ratio of the intramolecular transition velocity constants $T \rightarrow S_0$ and $T \rightarrow S'$ was calculated under the experimental conditions. It is shown that the probability of the $S' \rightarrow T$ transition in the uranium solutions is much higher than that for the unsubstituted rhodamine, which result agrees closely with the results obtained earlier.

1/1

USSR UDC 621.173:535

ARISTOV, A. V., KUZIN, V. A., and CHERKASOV, A. S.

"Generation of Stimulated Radiation by Solutions of Anthracene Derivatives"

Leningrad, Optika i Spektroskopiya, Aug 73, pp 330-335

Abstract: An investigation was made of the relationship of the yield threshold of generation (I_{thr}) to the yield-quantum of fluorescence (Y) in toluol solutions of 27 anthracene derivatives. A sharp difference was found to exist. Generation was excited by the second harmonic of a ruby laser (energy 0.03 joules, pulse duration 20 nanoseconds) with the resonator in a transverse position (resonator base 5 cm, reflection of the mirrors 98%). It was established that the decrease of Y as a result of luminescence quenching (intramolecular, concentration, by oxygen) is accompanied by an approximately equal increase of I_{thr}, and when $Y \approx 0.5$, a cutoff of the generation is observed. This is explained by the origination of induced triplet-triplet absorption. Satisfactory agreement is shown between the experimental relationship of I_{thr} to Y, and a calculated relationship is derived under the assumption that the triplet molecules responsible for the induced absorption are formed with a yield-quantum of (1 - Y). Two figures, one table, 11 references.

1/1

USSR

UDC 541.651+621.375.9

ARISTOV, A. V., VIKTOROVA, YE. N., MASLYUKOV, YU. S., REZNIKOVA, I. I., and CHERKASOV, A. S.

"Effect of Structure and Degree of Purity of Rhodamines on Their Oscillation Characteristics for Laser Pumping"

Minsk, Zhurnal Prikladnoy Spektroskopii, Vol 19, No 2, 1973, pp 250-253

Abstract: The authors find that there has been no investigation of the relative oscillation efficiency of the different rhodamines or of the effect of the degree of purity of the rhodamine on its oscillation efficiency. The present paper therefore presents the results obtained in oscillation tests, under identical conditions, of eleven rhodamines of different structures. Part of these specimens are commerical products, the remainder were specially synthesized by known methods. A listing of the nomenclature of the various specimens and a table of their relative oscillation characteristics are given. The latter shows that the rhodamine's oscillation ability is a function of the purity of the material. Also shown is a curve for the oscillation energy as a function of the optical density of the rhodamine solutions. The testing method is explained.

1/1

ARISTOV, N.

JPRS 55440

15 March 1972

CONDITIONS FOR FLIGHT OF MARTIAN SPACE PROBES

[Article by Candidate of Technical Sciences N. Aristov and Engineer A. Sokolov: "On a Trajectory of a Half-Billion Kilometers"; Moscow, Aviatsiya i Kosmonavtika, Russian, No 2, February 1972, pp 32-33, 38]

After covering a distance of almost a half-billion kilometers in a complex curve between the orbits of Earth and Mars, the Soviet automatic stations became artificial Martian moons and the nearest module of the "Mars-3" station for the first time in the history of cosmonautics made a soft landing on the Martian surface. A new and important step had been taken in studying the nature of the outer planets of the solar system by the use of rocket-space systems.

Behind the laconic words of the TASS communication concerning the entry of the station into a Martian satellite orbit and landing of the descent module on the planetary surface in Ptolemy the solution of a great number of scientific-technical and organizational problems. Among them an important place was occupied by the problems involved in the delivery of the station to Mars. The difficulties involved will be understandable if we turn to some of the peculiarities associated with preparations for and implementation of this experiment.

Present-day carrier-rockets do not have unlimited energy possibilities. Accordingly, in computations of the orbits of interplanetary flights it is important to choose the date of the launchings on which is dependent the energy expenditures necessary for the space vehicle to reach the planet. Launchings to Mars along trajectories requiring minimum fuel expenditures are possible approximately once in 25 months during periods of Martian opposition. For each specific flight it is necessary to compute the specific space vehicle propulsion velocity which may or may not correspond to the requirements of minimum energy expenditures. The "Mars-2" flight to its destination lasted 192 days, whereas the "Mars-3" flight lasted 138 days.

USSR

UDC 621.791.001.5:669.14:62-408.3:669.295

SHCHERBAK, M. A. (Engineer), ARISTOV, V. S. (Cand. of Techn. Sciences), SHEYKO, V. I. (Engineer) and PROKHOROV, P. A. (Cand. of Techn. Sciences)

"Problems of Welding Titanium-Clad Steel"

Moscow, Svarochnoye proizvodstvo, No 2, Feb 72, pp 19-20

Abstract: Automatic welding is finding expanding application in the fabrication of structures from clad steel. Of some interest therefore is the use of automatic welding of structures from titanium-clad steel. The experimental material in this study was St.3 steel clad with 3-4 mm VT1 titanium, the combined thickness being 10-20 mm. The experimental welding was performed under linear energies of 2300-8500 cal/cm. It is shown that the boundary layer of titanium-clad steel may be heated up to 700°C without affecting the mechanical properties. Heating the steel above that temperature causes a reduction of resistance to direct pull and shear. Discussed also is the need of lap-welded strap-reinforced facings to eliminate faulty fusions in the cladding layer. Tensile tests on both manual and automatic welded specimens showed 40.0-47.5 kg/mm^2. Static bend tests at a 160-degree angle performed on specimens of butt joints with longitudinal welds both manual and automatic failed to separate the cladding layer in the weld area. (2 illustr., 1 table, 5 biblio. references)

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USSR UDC 621.791.053.011:669.15-194:55 + 669.25 + 669.28 + 669.295

KUDINOV, YE. D., Engineer, PROKHOROV, P. A., Candidate of Technical Sciences, ARISTOV, V. S., Candidate of Technical Sciences, and SERBIN, N. G., Engineer

"Effect of Cobalt, Molybdenum, Titanium,and Chromium on Properties of Maraging Weld Metal"

Moscow, Svarochnoye Proizvodstvo, No 12, Dec 70, pp 22-23

Abstract: The authors studied the effect of cobalt, molybdenum, titanium,and chromium on the mechanical properties and structure of the weld metal in the welding of maraging steels ON18K8M5T and ON14Kh5M3T. The study specimens were prepared from 500 x 500 x 32 mm welded billets. Butt welds with a double-V symmetric groove were welded by manual argon-arc nonconsumable-electrode welding. The mechanical properties of the weld metal were determined after precipitation hardening of the specimens. The results indicate the following optimum contents for the weld metal: 5-7 percent cobalt, 2.5-3.5 percent molybdenum, 0.25-0.35 percent titanium,and 2.3-4.2 percent chromium.

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USSR UDC 8.74

ARISTOV, V. V., and ARISTOVA, L. YE.

"Modeling of Special-Purpose Digital Computer System"

V sb. Mat. modelir. i teoriya elektr. tsepey (Mathematical Modeling and Theory of Electric Circuits -- Collection of Works), vyp. 8, Kiev, "Nauk. Dumka," 1971, pp 67-72 (from RZh-Matematika, No 5, May 72, Abstract No 5V515 by V. MIKHEYEV)

Translation: The article considers a variant structure of a computer system consisting of one or more general-purpose digital computers and special-purpose digital units (SDU) intended for the performance of numerical integration. During the solution of a system of n^{th}-order differential equations of the form:

$$\begin{aligned} pY_1 &= f_1(X, Y_1, Y_2, Y_3, \ldots, Y_n), \\ pY_2 &= f_2(X, Y_1, Y_2, Y_3, \ldots, Y_n), \\ &\ldots\ldots\ldots\ldots\ldots \\ pY_n &= f_n(X, Y_1, Y_2, Y_3, \ldots, Y_n) \end{aligned} \qquad (1)$$

the general-purpose digital computer continuously calculates values of the right-hand sides of (1) according to data coming from the SDU. For every four rows of the initial system (1), only one value of the right-hand side is calculated. During the next step the value of the right-hand side for the next

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USSR

ARISTOV, V. V. and ARISTOVA, L. YE. , Mat. modelir. i teoriya elektr. tsepey, vyp. 8, Kiev, "Nauk. Dumka," 1971, pp 67-72

line is calculated and so on up to four, and then the process begins anew. Before the start of the next step these data are entered in the difference correction block of the SDU, where in the course of the next step running differences are determined more precisely and a solution extrapolated to compensate for the lag. The algorithm in question is presnted. The system was modeled on a Mir digital computer.

2/2

USSR UDC: 8.74

ARISTOV, V. V., ARISTOVA, L. Ye.

"Modeling of a Specialized Digital Computer System"

V sb. Mat. modelir. i teoriya elektr. tsepey (Mathematical Modeling and Electric Circuit Theory--collection of works), vyp. 8, Kiev, "Nauk. dumka", 1971, pp 67-72 (from RZh-Kibernetika, No 5, May 72, Abstract No 5V515)

Translation: The paper deals with a modification of the structure of a computer system consisting of one or more universal digital computers and a specialized digital device designed for realizing numerical integration. In solving a system of differential equations of n-th order of the type

$$\begin{aligned} pY_1 &= f_1(X, Y_1, Y_2, Y_3, \ldots, Y_n), \\ pY_2 &= f_2(X, Y_1, Y_2, Y_3, \ldots, Y_n), \\ &\ldots\ldots\ldots\ldots\ldots \\ pY_n &= f_n(X, Y_1, Y_2, Y_3, \ldots, Y_n) \end{aligned} \qquad (1)$$

the universal digital computer continuously calculates the values of the right-hand members from data coming from the specialized digital device. In this connection, only one value of the right-hand member is calculated for every four lines of initial system (1). During the next step, the

1/2

USSR

ARISTOV, V. V., ARISTOVA, L. Ye., Mat. modelir. i teoriya elektr. tsepey, vyp. 8, Kiev, "Nauk. dumka", 1971, pp 67-72

value of the right-hand member is calculated for the next line and so forth up to four. Then the process begins anew. Before the beginning of the next step, these data are transferred to the difference correction module of the specialized digital device where the instantaneous differences are refined during the next step, and the solution is extrapolated to compensate for delay. The corresponding algorithm is presented. The system was modeled on the "Mir" digital computer. V. Mikheyev.

USSR

ARISTOV, V. V. (Institute of Cybernetics, Ukrainian Academy of Sciences)

"An Analysis of the Systematic Error of a Quasi Analog With Pulse-Width Introduction of Coefficients"

Kiev, Dopovidi Akademii Nauk Ukrains'koi RSR: Seriya A - Fizyko-Tekhnichni ta Matematychni Nauky, July 1971, pp 632-634

Abstract: The author considers the systematic error in the solution of a system of homogeneous differential equations in a quasi analog with pulse-width introduction of coefficients. Expressions are obtained for "slow" integral errors and "fast" pulsating errors. Conditions are found for minimizing the main term of the integral component of the systematic error.

A theorem and two corollaries are presented. The article includes 12 equations. There are two bibliographic references.

USSR UDC:681.3

ARISTOV, V. V., SAMOYLOV, V. D.

"Modeling of a Hybrid Computer System"

Mashiny Dlya Inzh. Raschetov [Machines for Engineering Calculation -- Collection of Works], No. 2, Kiev, 1970, pp. 150-161 (Translated from Referativnyy Zhurnal Matematika, No. 11, 1970, Abstract No. 11V489)

Abstract: This program is designed for modeling the operation of a hybrid computer system in the mode used for solution of systems of ordinary differential equations with the following division of functions: the problem is input on the analog device with coefficients generally not corresponding to those required, while the digital device uses the data from the solution to calculate the vector of compensating action, which is then input to the corresponding units of the analog device through the communications device.

The Adams method is used to model analog integrators. The program also

USSR

UDC:681.3

ARISTOV, V. V., SAMOYLOV, V. D., Mashiny Dlya Inzh. Raschetov [Machines for Engineering Calculation -- Collection of Works], No. 2, Kiev, 1970, pp. 150-161 (Translated from Referativnyy Zhurnal Matematika, No. 11, 1970, Abstract NO. 11V489)

includes a subroutine for ordinary numerical solution of test problems by the Runge-Kutta method with a constant integration step. The results of comparison in the form of the maximum solution error R[L] in percent are printed out in response to the statement "OUTPUT" "TABLES."

2/2

1/2 024 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--UMWEGANREGUNG IN HOLOGRAPHY -U-

AUTHOR-(04)-ARISTOV, V.V., LYSENKO, V.G., SHEKHTMAN, V.SH., TIMOFEEV, V.B.

COUNTRY OF INFO--USSR

SOURCE--PHYS. LETTERS, NETHERLANDS, VOL. 31A, NO. 4, P. 169-70, 23 FEB. 1970

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--HOLOGRAPHY, POTASSIUM CHLORIDE, OPTIC SPECTRUM, EXCITATION ENERGY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1992/0502 STEP NO--NE/0000/70/031/004/0169/0170

CIRC ACCESSION NO--AP0111695

UNCLASSIFIED

2/2 024 UNCLASSIFIED PROCESSING DATE--30OCT70
CIRC ACCESSION NO--AP0111695
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN EXPERIMENTAL SCHEME HAS BEEN CONSTRUCTED FOR PRODUCING THE RENNINGER EFFECT IN THE OPTICAL RANGE. COLORED KCL CRYSTALS HAVE BEEN USED AS PHOTOSENSITIVE ELEMENTS. THE UMWEGANREGUNG WAVE HAS BEEN REGISTERED IN THIS EXPERIMENT.
FACILITY: ACAD. SCI. USSR, CHERNOGOLOVKA.

UNCLASSIFIED

A

USSR UDC 681.3.001:51

MALINOVSKIY, B. N., BOYUN, V. P., ARISTOVA, L. YE., ARISTOV, V. V.

"One Version of the Construction of a Hybrid Computer System"

Materialy. IV Resp. Nuachn Konferentsil Molodykh Issledovateley Po Sistemotekhn. T. 1 (Materials of the Fourth Republic Scientific Conference of Young Systems Engineering Researchers. Vol 1 - Collection of Works) Kiev, 1969, pp 148-150 (from Referativnyy Zhurnal Avtomatika, Telemekhanika I Vychislitel'naya Tekhnika, No 5, 1970, Abstract No 5 B23, V. G.)

Translation: Problems are discussed concerning the automation of the operation of a hybrid computer system in order to increase its productivity. The basis of the hybrid system is a high-speed digital machine, to which analog integrators are added for approximate integration and digital integrators are added for more precise integration. The digital machine in such a system translates the input information, selects the method of solution from among the analog and digital integrators, scales variables, refines the solution of the analog portion when necessary, calculates correlating functions, calculates the goal function when optimal control problems are

1/2

USSR

MALINOVSKIY, B. N., et al., Materialy. IV Resp. Nuachn. Konferentsil Molodykh Issledovateley Po Sistemotekhn. T. 1, Kiev, 1969, pp 148-150 (from Referativnyy Zhurnal Avtomatika, Telemekhanika I Vychislitel'naya T khnika, No 5, 1970, Abstract No 5 B23, By V. G.)

solved, controls the entire computer system, and also performs the functions of storage and distribution of initial and intermediate information. It is noted that, in spite of the fact that this type of computer system is specialized for the solution of ordinary differential equations, it can perform a number of other functions as well.

2/2

1/2 026 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--RESOLUTION OF A THREE DIMENSIONAL HOLOGRAM AS AN OPTICAL IMAGING SYSTEM -U-

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COUNTRY OF INFO--USSR

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SOURCE--AKADEMIIA NAUK SSSR, DOKLADY, VOL. 191, APR. 1, 1970, P. 795-798

DATE PUBLISHED--01APR70

SUBJECT AREAS--PHYSICS, METHODS AND EQUIPMENT

TOPIC TAGS--HOLOGRAM, ELECTROMAGNETIC WAVE DIFFRACTION, OPTIC IMAGE, PHOTOSENSITIVITY, MAGNETIC RECORDING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/1800 STEP NO--UR/0020/70/191/000/0795/0798

CIRC ACCESSION NO--AT0125412

UNCLASSIFIED

2/2 026 UNCLASSIFIED PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AT0125412

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CONSIDERATION OF THE PROCESS OF RECORDING ON A THREE DIMENSIONAL PHOTOSENSITIVE ELEMENT THE WAVE FIELD FROM AN OBJECT LOCATED IN THE FAR FIELD. IT IS SHOWN THAT DURING THE "READING" OF A THREE DIMENSIONAL HOLOGRAM THE RESOLUTION IN THE IMAGE OF THE OBJECT POINTS IS DETERMINED BY BOTH THE TRANSVERSE DIMENSIONS AND THE THICKNESS OF THE PHOTOSENSITIVE LAYER. THE PROCESS OF RECONSTRUCTION OF THE IMAGE OF AN OBJECT POINT IS REDUCED TO THE DIFFRACTION OF THE "READING" WAVE, WHICH OCNVERGES AT A CERTAIN POINT ON THE CORRESPONDING HARMONIC BLACKENING DISTRIBUTION. ACORDINGLY, THE INTENSITY DISTRIBUTION IN THE IMAGE OF AN OBJECT POINT CAB BE CALUCLATED ON THE BASIS OF THE THEORY OF ELECTROMAGNETIC WAVE DIFFRACTION BY THREE DIMENSIONAL PERIODIC STRUCTURES. FACILITY: AKADEMIIA NAUK SSSR, INSTITUT FIZIKI TVERDOGO TELA, CHERNOGOLOVKA, USSR.

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USSR UDC 8.74

ARISTOV, V. V., and ARISTOVA, L. YE.

"Modeling of Special-Purpose Digital Computer System"

V sb. Mat. modelir. i teoriya elektr. tsepey (Mathematical Modeling and Theory of Electric Circuits -- Collection of Works), vyp. 8, Kiev, "Nauk. Dumka," 1971, pp 67-72 (from RZh-Matematika, No 5, May 72, Abstract No 5V515 by V. MIKHEYEV)

Translation: The article considers a variant structure of a computer system consisting of one or more general-purpose digital computers and special-purpose digital units (SDU) intended for the performance of numerical integration. During the solution of a system of n^{th}-order differential equations of the form:

$$\begin{aligned} pY_1 &= f_1(X, Y_1, Y_2, Y_3, \ldots, Y_n), \\ pY_2 &= f_2(X, Y_1, Y_2, Y_3, \ldots, Y_n), \\ &\ldots\ldots\ldots\ldots\ldots \\ pY_n &= f_n(X, Y_1, Y_2, Y_3, \ldots, Y_n) \end{aligned} \qquad (1)$$

the general-purpose digital computer continuously calculates values of the right-hand sides of (1) according to data coming from the SDU. For every four rows of the initial system (1), only one value of the right-hand side is calculated. During the next step the value of the right-hand side for the next

1/2